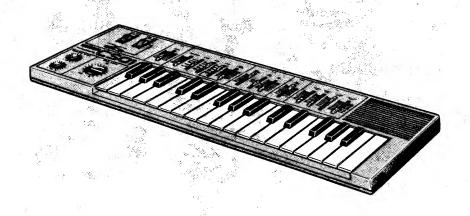
# YAMAHA

COMBO SYNTHESIZER
CS 01



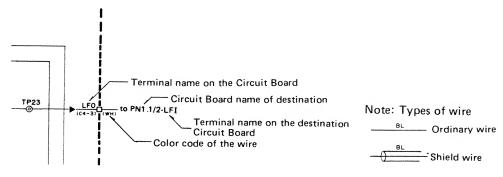
**SERVICE MANUAL** 

#### **INDEX**

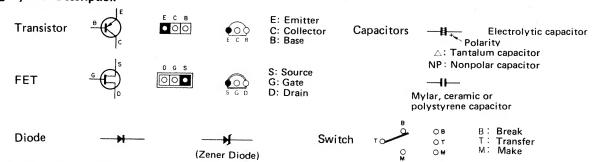
CORDING GUIDE
DISASSEMBLY PROCEDURE
SPECIFICATIONS
PANEL LAYOUT
PN CIRCUIT BOARD · BC CIRCUIT BOARD (BC1)
CHECKS & ADJUSTMENT
OFFSET VOLTAGE ADJUSTMENT OF BC1
PART LIST (CS01/BC01)

#### **CORDING GUIDE**

#### Wiring Notation



#### 2 Symbol Description



#### 3 Abbreviations of Wire Color Codes

BLACK(クロ)······BL	BROWN ( 7 + )BR	RED (アカ)RE
ORANGE(ダイ)OR	YELLOW ( ‡ 1 )YE	GREEN( ₹ )GR
BLUE(アオ)BE	VIOLET (ムラ)VI	GRAY (ハイ)GY
WHITE(シロ) ·······wH	GRASS GREEN(クサ)······GG	SKY BLUE(ソラ)·····SB
$PINK( \pm \pm ) \cdots PK$	TRANSPARENT(トウメイ)·····TR	

#### 4 Relation of Color Coding and Notes

С	C =	D	D	Ε	F	F#	G	G =	Α	A =	В
1	1		1		1	1	1	1	-		1
		OR									
(チャ)	(アカ)	(ダイ)	(キイ)	( ≥ F )	(アオ)	(ムラ)	(N1)	(シロ)	(クサ)	(ソラ)	$(\pm \pm)$

#### 5 Logic Symbols

	r	·
	MIL	YAMAHA
NOT	A - Y	A - > Y
NOR	A	A + 0Y
NAND	A	A

Truth Table						
Δ	В	Y				
L	L	Ł				
н	L	н				
L	н	н				
lн	н	н				

OR

NOR  B + - Y  Truth Table					
Δ	8	Y			
L	L	н			
н	L	L			
L	н	L			
н	н	L			

Exclusive OR (排他的論理和) a + + - Y Truth Table					
1	А	В	Υ		
	Ł	L	Ļ		
ı	н	Ł	н		
	L	н	н		
	н	н	L		
AND					

B - Y Truth Table						
Α	8	Y				
L	L	L				
н	L	L				
L	н	L				
н	н	н				

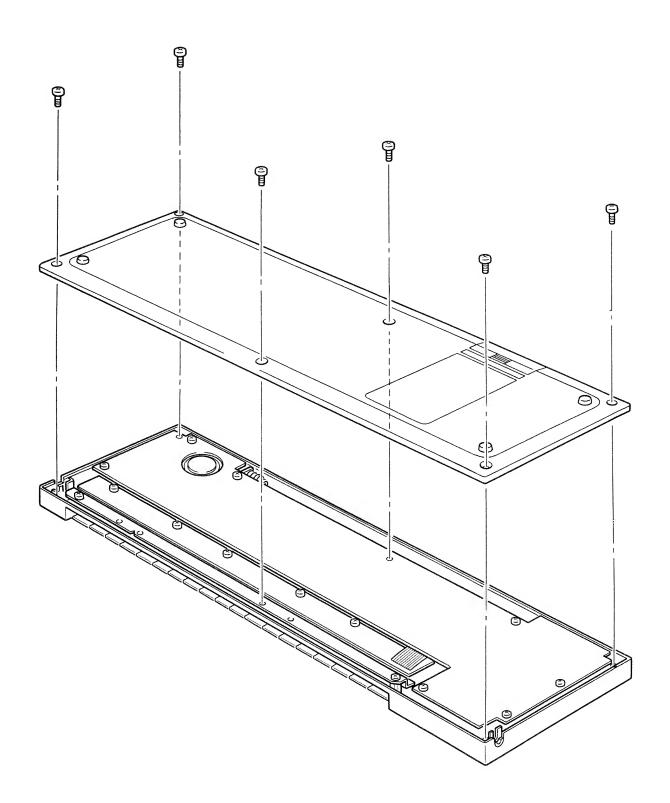
NOT (Inverter)						
Truth	Table					
Α	Y					
L H						
H L.						
NAND						

B Truth Table					
Α	8	Υ			
L	L	н			
н	L	н			
L	н	н			
н	н	L			

#### DISASSEMBLY PROCEDURE

#### • Removal of Bottom Panel

Remove all screws illustrated above and take away the bottom panel.



#### **SPECIFICATIONS**

KEYBOARD | 32 keys, F2 ~ C5

LFO Speed 0.8 ~ 21 Hz

GLISSANDO | Speed  $0 \sim 6 \pm 2$  Sec.

VCO PITCH - ~ 0 ~ +

FEET 4', 8', 16', 32', NOISE

WAVE  $\land$  ,  $\land$  ,  $\sqcap$  ,  $\sqcap$  , pwm

PWM Speed 0.6 ~ 12 Hz

VCF CUT OFF L ~ H

RESONANCE H/L

EG DEPTH 0~10

VCA EG DEPTH 0~10

EG ATTACH TIME S~L

DECAY TIME S~L

SUSTAIN LEVEL  $0 \sim 10$ 

RELEASE TIME S~L

WHEELS PITCH BEND 1 oct

MODULATION VCO/VCF

BREATH CONTROL VCF 0 ~ 10

VCA 0~10

POWER SWITCH/VOLUME 0 ~ 10

VOLUME 0 - I

SIDE PANEL LINE OUT 10 kΩ

PHONES 8 ~ 150  $\Omega$ 

DC IN (use PA-1 adaptor)

**BREATH CONT. IN BC1** 

POWER SOURCE "R6" or "AA" battery x 6 (9 V)

AC Adaptor PA-1 (DC 12 V, 300 mA)

POWER CONSUMPTION No Output, 550 mW

Maximum Output, 2700 mW

DIMENSIONS (WxHxD) | 489 x 36 x 160 mm (19-1/4" x 1-1/2" x 6-3/8")

WEIGHT 1.5 kg (3 lbs, 5 oz)

ACCESSORIES Breath Controller BC1

ACAdaptor PA-1

Soft Case SC-01

Stereo Headphone MH10

Specifications are subject to change without notice.

#### CHECKS & ADJUSTMENT

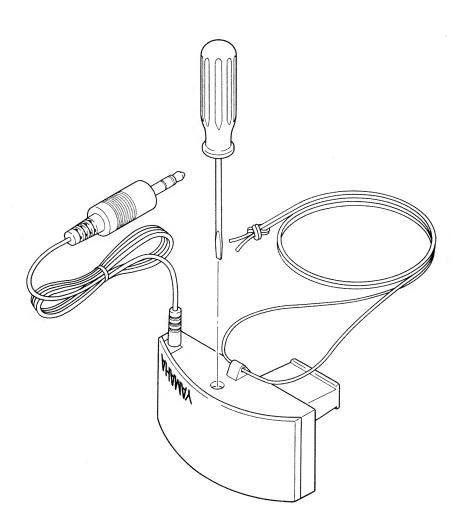
#### 調整基準 ADJUSTMENT

Adjustment 調整項目	Measurment 測定点	Control Setting セッティング	Value	Adjustment Location 調整VR	
M aster OSC	則定点 TP7	PITCHCenter	測定值 565.3±0.5KHz	調金VR VR3	
			00.0 = 0.011.2		
White Noise	TPI	FEETWN	— 15 ± 1 dBm	VR2	
		Set Pin 2 of  FREQ CUT OFF lever  to 0.8V with it  FREQ CUT OFF	Peak Point	VR4	
VCF	TP3	で、その2ピンを0.8Vにする RESONANCE	2Vp-p	VRI	
Battery Indicator	LED is turned on and off when battery voltage is less than 6.5±0.5V 電池の電圧が6.5±0.5V以下でLEDが点滅します。				

#### OFFSET VOLTAGE ADJUSTMENT OF BC1

The CS01 produces a sound even when the BC1 is not blown. Or no sound is produced unless BC1 is blown hard to a certain degree. In this case, adjust the trim potentiometer for the BC1 in the following manner:

- 1. Place the CS01 in the basic setting specified in the instruction manual, and set the breath control VCA knob to "10".
- 2. Connect the BC1 to the CS01.
- 3. Using a small screwdriver, turn the BC1 trim potentiometer all the way to the right, and sound will be produced through the CS01. Next, turn it slowly to the left and when the CS01 stops sounding, stop turning the trim potentiometer.

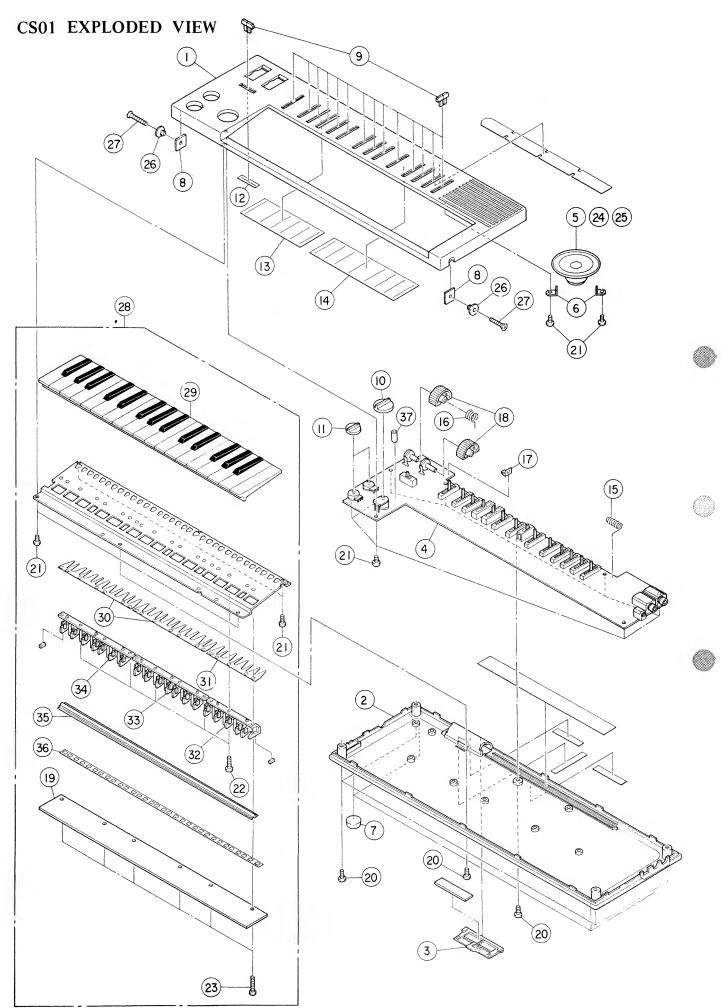


## YAMAHA

CS01/BC1

PARTS LIST

03-06-04-013



#### Mechanical Parts (内装部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model		
1	CB 82 51 90	Top Case		上ケース			
2	CB 82 52 00	Bottom Case		下ケース			
3	CB 82 52 10	Battery Cover		電池蓋			
4	NA 80 90 60	Circuit Board, PN	<b>=8937</b>	PNシート	1		
5	JA 06 52 10	Speaker		スピーカー			
6	AA 82 42 50	Holder,Speaker		スピーカー固定金具			
7	CB 03 71 20	Leg	<u> </u>	スベリ座			
8	AA 82 42 20	Nut,Strap pin		特殊ナット			
9	CB 82 52 20	Knob, Slide		ツマミ			
10	CB 82 52 30	Knob, Rotary, Large		"	VOLUME		
11	CB 82 52 40	Knob, Rotary, Small		"	BREATH		
12	<del>                                     </del>	Dust-proof Cover	40×10×0.35	防塵クロス	CONTROL		
13	CA 80 33 10		108×47×0.35	P) Jise 2 Sa 2			
14	CA 80 33 20		153.5×47×0.35	n			
15	-	Spring, Battery	100.0 \ 47 \ 0.00	接点バネ			
16	AA 82 42 40						
17		Terminal, Battery		ポイール戻りバネ			
18	CB 82 52 50	· · · · · · · · · · · · · · · · · · ·		端子板			
19		Circuit Board, MK	#0020	ホイール		-	
20		Binded Tapping Schew	#8939	MKシート			
21	Ei 33 00 80		3×10 BI	バインド・タッピング・ネジ			The state of the s
22	Ei 03 01 40	**-	3×8 BI	"			
	1		3×14 Ye	n n	-		
23	Ei 03 01 80		3×18 Ye	"			
24	LB 20 13 80		H2P-SHF	2Pハウジング	JA06521		
25	BB 00 44 30			コンタクト・ピン	JA06521		
26	BB 80 11 70			肩掛けバンド・ピン		SG800	
27	<del> </del>	Oval Head Screw	3×16 Cr	丸皿小ネジ			
28	<del> </del>	Keyboard Assembly		鍵盤Ass'y			
29	CB 04 03 70	· · · · · · · · · · · · · · · · · · ·	F	白鍵		PC-100	
	CB 04 03 80		G	"		PC-100	
	CB 04 03 90	-do-	A	"		PC-100	
	CB 04 04 00	do	В	"		PC-100	
	CB 04 04 10	-do-	С	μ		PC-100	
	CB 04 04 20	-do-	D	n		PC-100	
	CB 04 04 30	-do-	E	н		PC-100	
	CB 04 04 40	-do-	F', C'	н		PC-100	
	CB 04 04 50	Black Key		黒鍵		PC-100	
30	AA 05 30 70	Sqring, Keydoard	F12	鍵バネ			
3 1	AA 05 30 80	-do-	F8	II			
32	CB 04 04 80	Holder	F8	ホルダー			
33	CB 04 04 70	-do-	F12	п			
34	CB 04 11 20	-do-	LF12	II .	The state of the s		
35	CB 04 22 70	Rubber Contact	F32-6	可動導伝コム			
	<del></del>	Insulation Spacer		絶縁スペーサー			
	CB 82 52 60			LEDスペーサー			
		-					
		~				<del>    </del>	
		***************************************		<u> </u>			
		MANAGER A. A. C.				<del>  -</del>	
						1	

#### Electrical Parts (電気部品) (1/2)

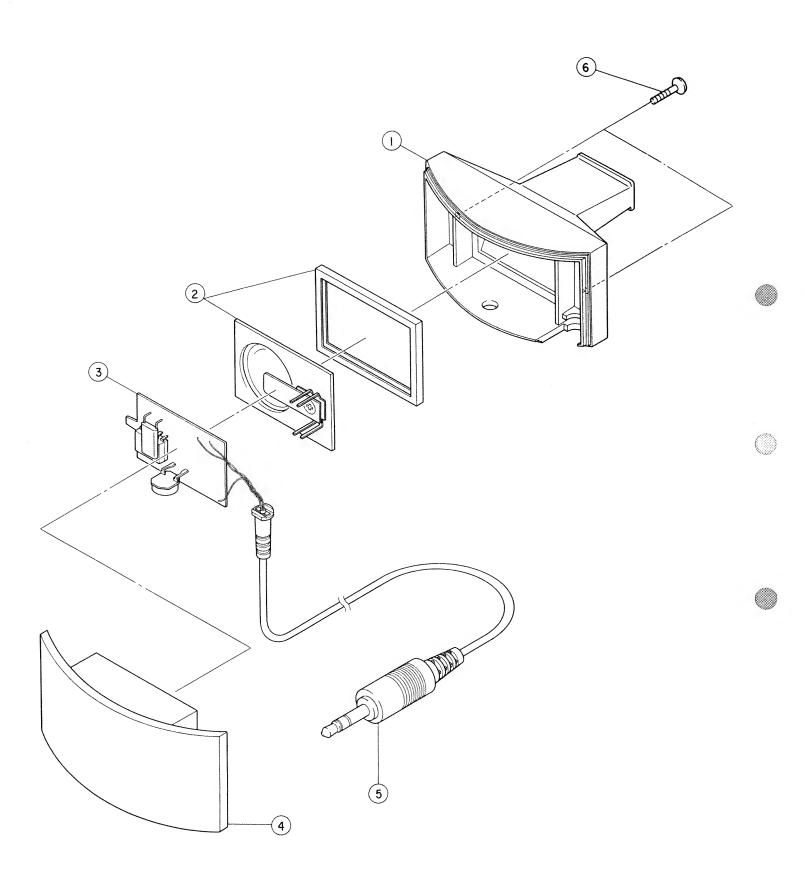
Ref. No.	Part No.	Descri	ption	(部 品 名)	Remarks	Common model	
	NA 80 90 60	Circuit Board, PN	#8937	PN:			
				*			
	iG 02 60 00	IC	iG02600	IC	VCA		
	iG 02 60 10		iG02601	"	VCF		
	iG 04 58 00		LA4138	"	Power		
	iG 05 38 00		M5232L	и	Amp.		
		-do- 500mA9v	NJM78M09H	"	Driver Regu		
·····	iG 06 82 00		TC7476BP	"	lartor FF		
	iT 10 15 00		YM10150	Я	DTG		
	11 10 13 00	00	1101100	- "	Did		
	iA 10 15 70	Transistor	2SA1015(0,Y)	トランボフタ			
	iA 11 64 00			トランジスタ			
	<del></del>		2SA1164(Y)	n n			
	iC 07 52 20		2SC752(Y)	"		<del></del>	
	10 18 15 70		2SC1815(0,Y)	"			-
-	F 100 20 25		00//00 10/0				
	iE 00 00 10	· · · · · · · · · · · · · · · · · · ·	2SK30A(Y)	FET			
~~~		<b>.</b> .					
	iF 00 00 40		1S1555	ダイオード			
	iF 00 03 00		1S1715P	ツェナー・ダイオード			
	iF 00 08 60		WZ5.6	9			
	iF 00 11 90		TLR-124	LED			
	iF 00 14 70	Zener Diode	RD6.2EB2	ツェナー・ダイオード			
	iH 00 05 90	Diode	10E-1	ダイオード			
	HQ 46 00 10	Slide Pot, Resistor	Α10ΚΩ	スライド・ボリューム	FREQ CUT		
	HQ 46 00 20	-do-	B10KΩ	II.	PITCH, VCF EG, SASTAIN		
	HQ 46 00 40	-do-	A1MΩ SW	Н	GLISSANDO		
	HQ 46 00 50	-do-	SB10KΩ	n	VCA EG- DEPTH		
	HQ 46 00 60	-do-	C500K Ω	n	PWM SPEED		
	HQ:46:00:70	do	RD1MΩ	Н	LFO SPEED		
	HQ 46 00 90	-do-	Α2ΜΩ	η	ATTACK,DECA- Y, RELEASE		
					1, NELEASE		
	HS 31 17 50	Rotary Pot. Resistor	B10K	ロータリー・ボリューム	BREATH		
	HS 31 17 60		A10K, SW	"	POWER POWER		
	HS 31 18 00		A10K, 90°	"	PITCH		
	HS 31 18 10		B10K, 90°	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	BEND MODULA-		
	1.0,0,10		DION, 30	"	TION		
	HT:77:00:60	Trim Pot. Resistor	B10K	#B\$+C++	Noise	-	
	HT 77 00 70			半固定抵抗	Noise Master Clock.		
			B20K	"	Master Clock, VCF Q		
	HT 77 00 90	-uo-	B100K	n n	VCF fc		
	111157776	A					
		Metal Film Resistor	12ΚΩ	金属皮膜抵抗			
	HU 57 72 70	***************************************	27ΚΩ	п			
	HU 57 73 30		33ΚΩ	"			
	HU 57 82 20	-do-	220ΚΩ	"			
	H7:00:35:00	Manal Ellas Devices	0.0%				
	nz 00 25 60	Metal Film Resistor	2.2ΚΩ	リニア抵抗			
	Hi 20 99 90	Solid Resistor	10ΜΩ	ソリッド抵抗			
		22.4 (100.00)	1011132	> 7 7 1 TO TU			
	UA 55 51 00	Mylar Capacitor	0.1	小型マイラーコン			
	UA 55 51 50		0.15	小玉ヾ1フーコン	-		

※:New Parts (新部品)

#### Electrical Parts (電気部品) (2/2)

Ref. No.		Par	t N	٥.	Descript	ion	(部 品 名)	Remarks	Common	
	UJ	12	74	70	Electrolytic Capacitor	47μF/10V	ケミコン		1	
	UJ	12	81	00	do	100μF / 10V	Jf.			
	UJ	12	84	70	-do-	470μF / 10V	В		-	
	UJ	12	91	00	-do-	1000μF 10V	n n		-	
	UJ	13	71	00	-do-	10 <sub>µ</sub> F / 16V	II.	-		
	UJ	13	72	20	-do-	22μF / 16V	n.			
	UJ	14	64	70	-do-	4.7 <sub>μ</sub> F/25V	п			
	UJ	16	54	70	do	0.47 µF / 50V	u u			
	UJ	16	61	00	-do-	1 <sub>H</sub> F / 50V	#	<del> </del>		
	UJ	16	62	20	-do-	2.2 µF / 50V	и			
			-	1				<del> </del>		
	UK	34	64	70	Bipolar Electrolytic Capacitor	4.7 <sub>µ</sub> F 25V	BPケミコン			
	<b></b>	<del></del>	:	<del>!</del>						
	KA	40	10	50	Slide Switch	2-2	スライド・スイッチ	RESONANCE,		
		<u> </u>	<u> </u>	<del></del>	do	2-5	"	FEET, WAVE		
	<del>                                     </del>	:			_					
	LB	20	14	10	Base pin 2.5pitch	SE BS2P-SHF	NHコネクター	Speaker		
		+	•		Jack, DC-IN	S-G9312	DC-INジャック	DC-IN		
					Jack, Mini, Stereo	S-G8040	ステレオ・ミニ・ジャック	BREATH		
		<del>-</del>	-	-	Phone Jack, Stereo	3-00040	フォーン・ジャック	CONTROL		
				1	Base Pin 2.5pitch	SE BS12P-SHF		Phones		
			20	- 10	base riii 2.5pitcii	3E B312F-3HF	NHコネクター	Key Cord		
	ΔΛ	82	12	30	Spring, Battery		4* b			
		-	-	-			接点バネ	-		
	~~	02	42	40	Spring, Wheel		ホイール戻りバネ			
	DD	90	1.0	70	Taminal Data		All man Let			
	ББ	00	10	70	Terminal, Battery		端子板	-		
	CD	0.2		50	W1 14/6 I					
				,	Knob, Wheel		ホイール			
	CB	82	52	60	LED Spacer		LEDスペーサー			
		-00	20	0.0				MLM		
					Pan Head Screw	2.6×6 Ye	ナベ小ネジ	78M09H		
	ΕV	10	02	60	Hexagonal Nut	2.6	六角ナット	78M09H		
	NA	80	90	80	Circuit Board, MK	#8939	MKシート			
	iF	00	00	40	Diode	1S1555	ダイオード			
	Mi	80	13	50	Flat Cable	12P	フラットケーブル			
	BB	00	44	90	Contact	SHF-001T08CS	コンタクト			
	LB	60	29	20	Housing 2.5pitch	H12P-SHF	2.5ピッチ・ハウジング			
			-7							
		:								
		:	:							
$\neg \neg$		-	:	1						
	;	<del></del>		$\dashv$						

#### **BC1 EXPLODED VIEW**



#### Mechanical Parts (内装部品)

Ref. No.	Ref. Part No.		lo.	Description		(部 品 名)	Remarks	Common model		
1	CB 8	2 53	30	Mouthpiece		マウスビース				
2	iT 4:	3 90	40	Senser Unit		センサーユニット				
3	NA 8	96	70	Circuit Board, BC		BCシート				
4	NB 82	42	60	Front Case Ass'y		フロントケース				
5	Mi 80	13	40	Plug, Minutia		ミニプラグ				
6	EM 32	61	00	Oval Head Tapping Screw	2.6×10 BL	丸皿タッピンネジ				
	CB 8:	2 53	60	Soft Case		ソフトケース				
		:	:							
		:								
			:							
		-	;							
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		:								

<sup>※:</sup>New Parts (新部品)

#### Electrical Parts (電気部品)

	Ref. No.		Par	t N	ο.		Description		(部 品 名)	Remarks	Common model	
*		NA	80	90	70	Circuit Board	d, BC		BCシート			
		iG	00	13	90	IC		NJM45558DV	IC			
		iF	00	oc	40	Diode		1S1555	ツェナーダイオード			
		iF	00	16	60	Zener Diode		RD3.6EBI	ツェナーダイオード			
*		НҮ	00	15	20	Semi Variable	Resister	Β-50ΚΩ	半固定抵抗			
								•				
			:									
				:								
ļ												
					:							
			4 6 8	,								

※:New Parts (新部品)

#### CS01 SERVICE MANUAL

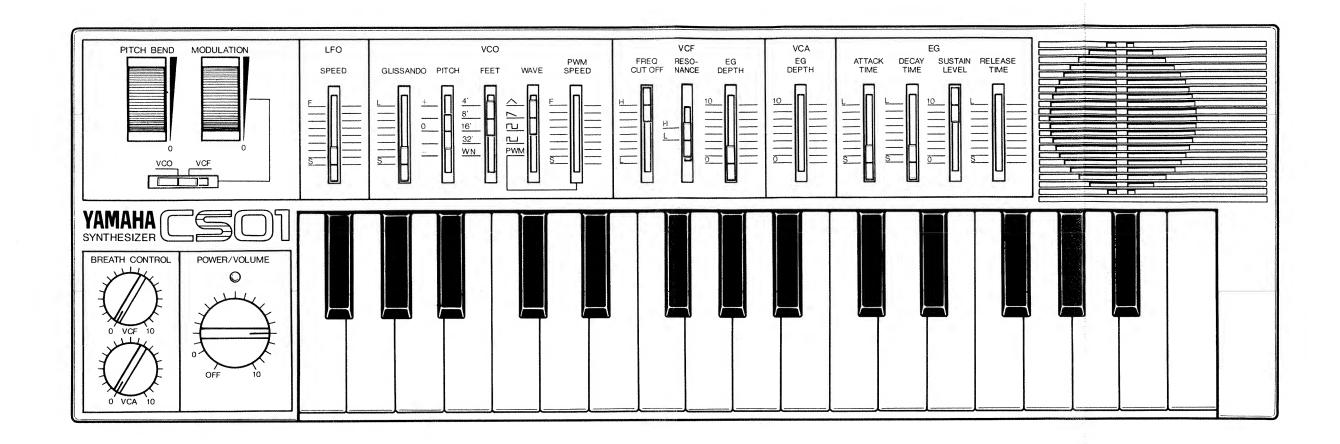
1982年 5月 初版発行

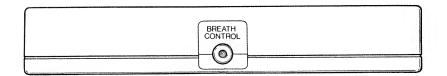
発 行 所:日本楽器製造株式会社

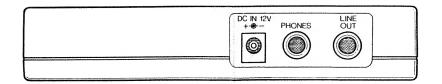
電音サービス課

版下・印刷:クニムラ印刷紙器株式会社

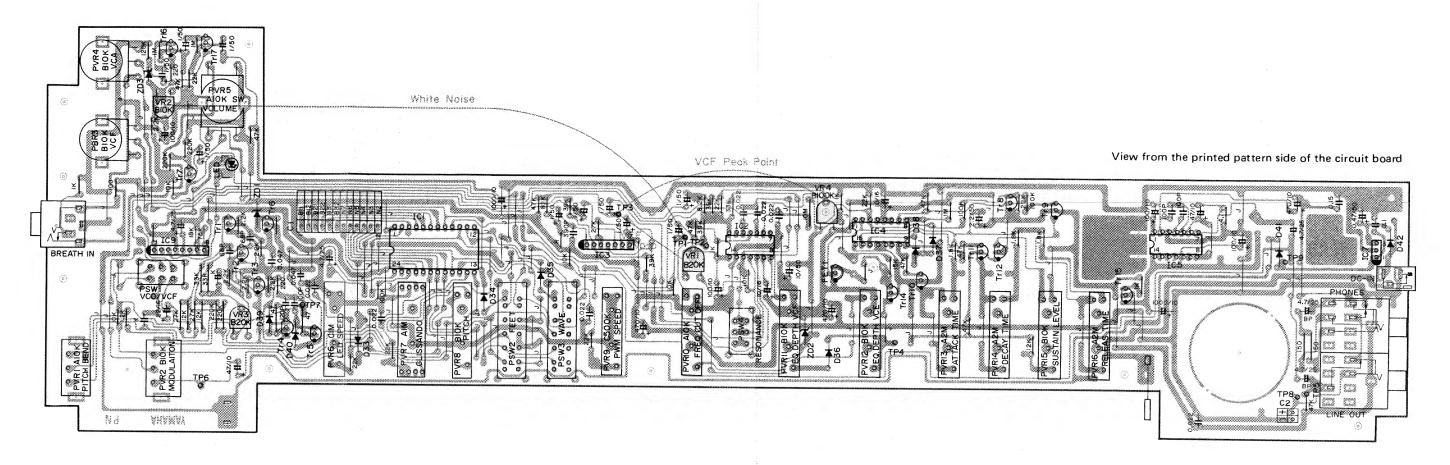
#### PANEL LAYOUT



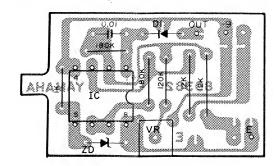




#### PN CIRCUIT BOARD BC CIRCUIT BOARD (BC1)



#### View from the component side of the circuit board



#### NOTE)

1. IC : NJM4558DV

2. Diode

Di : 1S1555 ZD : RD3.6EB1

#### KEC-90564-1Z KEC-90563-1X

#### NOTE)

1. IC

IC1 : YM10150 IC2 : iG02610 : iG02600 IC4 : TC7476BP IC5 : LA4138 IC6 : M5232L IC7 : NJM78M09H

#### 2. Transistor

 $Tr 1 \sim 3, 5$ : 2SC752 (Y) Tr 4 : 2SA1164 (Y) Tr 8, 9, 11, 12, 15 ~ 17 : 2SC1815 (O, Y) Tr 8, 10, 14, 16 : 2SA1015 (O, Y)

3. FET

FET1 : 2SA30A (Y)

4. Diode

 $D1 \sim 40$  : IS1555 D41, 42 : 10E-1 ZD1 : WZ5.6 ZD2 : RD6.2EB2 ZD3 : IS1715P LED : TLR-124

### CSO1 BLOCK DIAGRAM 006892

